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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,865	03/10/2005	Robert E. Lo	23095	6670
535	7590	12/04/2006	EXAMINER	
THE FIRM OF KARL F ROSS 5676 RIVERDALE AVENUE PO BOX 900 RIVERDALE (BRONX), NY 10471-0900			MCDONOUGH, JAMES E	
			ART UNIT	PAPER NUMBER
			1755	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/511,865	Applicant(s) LO ET AL.	
	Examiner James E. McDonough	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/28/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-15 is/are rejected.
- 7) ☒ Claim(s) 4,7-9 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/15/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claims 1-2, 6 and 10-11, the phrase "for example" or "especially" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 1-6 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reynolds (US Patent No. 3,259,532) in view of Grosse et al. (US Patent No. 3,137,127).

Reynolds teaches the use of a carbonaceous substance dispersed in liquid oxygen. This mixture is then incorporated into the interstices of a metal sponge that inherently has hollow spaces of a size that would affect the combustion speed (preferably aluminum or magnesium) (column 1, line 44 to column 2, line 5).

Although, Reynolds does not explicitly disclose the freezing of the liquid oxygen to form a solid monergole propellant, Reynolds does disclose that the liquid oxygen suspension can be incorporated into the interstices by either directly pouring of the suspension onto the sponge or by immersing the sponge in the suspension (column 2, line 34 to column 2, line 49). However, because Grosse et al. disclose the use of a fuel/oxidizer or both that are normally gaseous or liquid at room temperature being frozen solid for use as a rocket motor (column 1, line 14 to column 1, line 47) giving the advantage of having a high specific impulse as normal for liquid fuel engines without the typical draw backs such as extra plumbing, valves, and separate containers for the fuel and oxidizer associated with liquid fuel rocket engines (column 1, line 48 to column 2, line 6), It is prima facie obvious to combine two or three compositions, each taught for the same purpose to yield a third composition for that very purpose. *In re Kerkhoven*, 205 USPQ 1069, *In re Pinten*, 173 USPQ 801, and *In re Susi*, 169 USPQ 423.

Also, it would have been obvious to someone of ordinary skill in the art at the time of the invention to change the size of the hollow spaces in the sponge, thereby

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affecting the rate of combustion by changing the surface area, since the reaction kinetics of solid reactants are primarily controlled by the available surface area of said reactants. As to limitations which are considered to be inherent in a reference, note the case law of *In re Ludke*, 169 USPQ 563; *In re Swinehart*, 169 USPQ 226, *In re Fitzgerald*, 205 USPQ 594; *In re Best et al*, 195 USPQ 430; and *In re Brown*, 173 USPQ 685, 688.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reynolds (US Patent No. 3,259,532) in view of Grosse et al. (US Patent No. 3,137,127) in further view of Stickler (US Patent No. 5,529,648).

Although, neither Reynolds nor Grosse et al. explicitly disclose the use of an initially encapsulated liquid that is then bonded with the solid structure then frozen. However, because Stickler teaches the use of a dispersion of encapsulated liquid within a solid fuel matrix (column 3, line 60 to column 4, line 5) and Grosse et al. disclose the use of a fuel/oxidizer or both that are normally gaseous or liquid at room temperature being frozen solid together for use as a rocket motor (column 1, line 14 to column 1, line 47), it is prima facie obvious to combine two or three compositions, each taught for the same purpose to yield a third composition for that very purpose. *In re Kerkhoven*, 205 USPQ 1069, *In re Pinten*, 173 USPQ 801, and *In re Susi*, 169 USPQ 423.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reynolds (US Patent No. 3,259,532) in view of Grosse et al. (US Patent No. 3,137,127) in further view of Keilbach et al. (US Patent No. 3,691,769).

Although, neither Reynolds nor Grosse et al. explicitly disclose the use of a protective coating on the solid phase to chemically insulate the two reactants from one another. However because Keilbach et al. disclose that metals when mixed with an oxidizer in a rocket engine need to be protected from oxidation (column 4, line 16 to column 4, line 33), it is prima facie obvious to combine two or three compositions, each taught for the same purpose to yield a third composition for that very purpose. *In re Kerkhoven*, 205 USPQ 1069, *In re Pinten*, 173 USPQ 801, and *In re Susi*, 169 USPQ 423.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM 11/21/2006

Aileen Felton
AILEEN FELTON
PRIMARY EXAMINER